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WHAT IS CLAIMED IS:

1. An electro-optical device, comprising:

a first substrate having a first alignment layer subjected to a rubbing process;

a second substrate opposed to the first substrate, and having a second alignment layer subjected to the rubbing process;

an electro-optical material interposed between the first substrate and the second substrate;

a step portion, formed on a surface of at least one of the first alignment layer and the second alignment layer, and downwardly rubbed in a direction of the rubbing process; and

a light-shielding layer formed in an area facing the step portion that is downwardly rubbed in the direction of the rubbing process, and formed on at least one of the first substrate and the second substrate.

2. The electro-optical device according to claim 1, the step portion being provided at a projection formed to extend in a direction intersecting the direction of the rubbing process.

3. The electro-optical device according to claim 2, further comprising a plurality of pixel electrodes on one of the first substrate and the second substrate, the projection being formed in an area that corresponds to a spacing between adjacent pixel electrodes that are driven in mutually different polarities.

4. The electro-optical device according to claim 2, an upwardly rubbed portion of the projection which is upwardly rubbed in the direction of the rubbing process not opposing to the light-shielding layer.

5. The electro-optical device according to claim 1, the step portion being provided at a hollow portion formed to extend in a direction intersecting the direction of the rubbing process.

6. The electro-optical device according to claim 5, the hollow portion being a groove formed in one of the first substrate and the second substrate, and a line bieng arranged in an area of the groove.

7. The electro-optical device according to claim 6, an upwardly rubbed portion of the hollow portion which is upwardly rubbed in the direction of the rubbing process is not opposing to the light-shielding layer.

8. The electro-optical device according to claim 1, one of the first substrate and the second substrate comprising a plurality of pixel electrodes, and an area of the one substrate corresponding to the spacing between adjacent pixel electrodes which are driven with same polarity is subjected to a planarizing process.

9. The electro-optical device according to claim 8, the planarizing process being performed by forming a groove in the one substrate and arranging a line in an area of the groove.

10. The electro-optical device according to claim 8, a distance between the adjacent pixel electrodes which are driven with the same polarity is larger than a layer thickness of the electro-optical material.

11. The electro-optical device according to claim 1, the direction of the rubbing process being perpendicular to a downwardly rubbed portion of the step portion.

12. The electro-optical device according to claim 1, the direction of the rubbing process slanting to a downwardly rubbed portion of the step portion.

13. An electro-optical device, comprising:

a first substrate having a first alignment layer subjected to a rubbing process;

a second substrate opposed to the first substrate, and having a second alignment layer subjected to the rubbing process;

a liquid crystal interposed between the first substrate and the second substrate;

a portion of the liquid crystal having a reverse tilt angle, and formed on a surface of at least one of the first alignment layer and a second alignment layer; and

a light-shielding layer formed in an area facing the portion of the liquid crystal having the reverse tilt angle, and formed on at least one of the first substrate and the second substrate.

14. An electro-optical device, comprising:

a first substrate having a plurality of pixel electrodes and a first alignment layer subjected to a rubbing process;

a second substrate opposed to the first substrate, having a counter electrode and a second alignment layer subjected to the rubbing process;

an electro-optical material interposed between the first substrate and the second substrate;

a step portion, formed on a surface of the first alignment layer in an area corresponding to a spacing between pixel electrodes on the first substrate, and downwardly rubbed in a direction of the rubbing process, and

a light-shielding layer formed in an area facing the step portion that is downwardly rubbed in the direction of the rubbing process, on at least one of the first substrate and the second substrate.

15. The electro-optical device according to claim 14, a downwardly rubbed portion of the step portion being formed in the spacing between adjacent pixel electrodes that are driven in mutually different polarities.

16. An electro-optical device, comprising:

a first substrate having a plurality of pixel electrodes and a first alignment layer subjected to a rubbing process;

a second substrate opposed to the first substrate having a counter electrode and a second alignment layer subjected to the rubbing process;

an electro-optical material interposed between the first substrate and the second substrate;

a light-shielding layer formed at least on one of the first substrate and the second substrate and defining a pixel area; and

a step portion having an upwardly rubbed portion in a direction of the rubbing process, the upwardly rubbed portion being formed in a vicinity of an area facing the light-shielding layer on a surface of the first alignment layer on the first substrate.

17. The electro-optical device according to claim 16, the step portion being formed at a projection that is formed to extend in a direction intersecting the direction of the rubbing process.

18. The electro-optical device according to claim 17, the electro-optical material in an area of the step portion being thinner in thickness than the electro-optical material in an area where no step portions are formed.

19. The electro-optical device according to claim 16, the step portion being formed at a hollow portion that is formed to extend in a direction intersecting the direction of the rubbing process.

20. The electro-optical device according to claim 19, the hollow portion being a groove formed in the first substrate, and a line being arranged in an area of the groove.

21. The electro-optical device according to claim 16, the upwardly rubbed portion of the step portion being formed in a light transmissive area.

22. An electro-optical device, comprising:

a first substrate formed of a plurality of layers, including a first alignment layer subjected to a rubbing process and having a plurality of pixel electrodes;

a second substrate opposed to the first substrate, having a counter electrode and a second alignment layer subjected to a rubbing process;

an electro-optical material interposed between the first substrate and the second substrate;

a groove formed in the first substrate;

a line arranged along the groove;

a step portion formed on a surface of the first alignment layer in an area of the groove; and

a light-shielding layer formed in an area facing the step portion that is downwardly rubbed, at least on one of the first substrate and the second substrate,

a direction of the rubbing process of the first substrate being aligned in a downwardly rubbing direction to the step portion.

23. The electro-optical device according to claim 22, the line forming a storage capacitor.

24. An electro-optical device, comprising:

a first substrate having a plurality of pixel electrodes;

a second substrate opposed to the first substrate;

an electro-optical material interposed between the first substrate and the second substrate;

a projection formed on a surface of an alignment layer of the first substrate in an area corresponding to a spacing between adjacent pixel electrodes that are driven in mutually different polarities, the projection comprising a downwardly rubbed portion in a direction of the rubbing process of the first substrate; and

a light-shielding layer formed in an area facing the downwardly rubbed portion, on at least one of the first substrate and the second substrate.

25. The electro-optical device according to claim 24, the projection being formed by arranging a line.

26. The electro-optical device according to claim 24, the projection comprising an upwardly rubbed portion that is upwardly rubbed in the direction of the rubbing process, and the upwardly rubbed portion being formed in a light transmissive area.

27. A projector comprising:

an electro-optical device according to claim 24; and

a projection optical system.

28. A substrate having a plurality of pixel electrodes, comprising:

an alignment layer that is subjected to a rubbing process; and

a step portion formed on a surface of the alignment layer in an area corresponding to a spacing between the pixel electrodes, and upwardly rubbed in a direction of the rubbing process.

29. The substrate having a plurality of pixel electrodes according to claim 28, the step portion being formed at a groove in which a line is arranged.

30. The substrate having a plurality of pixel electrodes according to claim 28, the step portion being at a projection for weakening a transverse electric field taking place between pixel electrodes.

31. The substrate having a plurality of pixel electrodes according to claim 28, the step portion comprising a downwardly rubbed portion that is downwardly rubbed in the direction of the rubbing process, and a light-shielding layer being formed in an area facing the downwardly rubbed portion.

32. A method for manufacturing an electro-optical device comprising mutually opposed first substrate and second substrate with an electro-optical material interposed therebetween, a plurality of pixel electrodes and an alignment layer formed on the first substrate, and a counter electrode opposed to the pixel electrodes and formed on the second substrate, the method comprising:

forming a substrate surface in one direction in which pixel electrodes are adjacent to each other so that the alignment layer between the pixel electrodes and the alignment layer over the pixel electrodes are planarized;

forming in another direction in which pixel electrodes are adjacent to each other a first step portion projecting from the substrate surface beneath a spacing between the adjacent pixel electrodes;

forming the pixel electrodes so that an edge of each pixel electrode corresponds to the first step portion;

performing a rubbing process to the alignment layer; and

forming a light-shielding layer on at least one of first substrate and the second substrate so that the light-shielding layer overlaps one of the inclined surfaces of the first step portion in a plan view, along which a direction of the rubbing process of the alignment layer is downward.

33. A method for manufacturing an electro-optical device comprising mutually opposed first substrate and second substrate with an electro-optical material interposed therebetween, a plurality of pixel electrodes and an alignment layer formed on the first substrate, and a counter electrode opposed to the pixel electrodes and formed on the second substrate, the plurality of the pixel electrodes comprising a first group of pixel electrodes which are alternately driven in a first period, and a second group of pixel electrodes which are alternately driven in a second period complementary to the first period, the method comprising:

forming a substrate surface in one direction in which pixel electrodes of the same pixel electrode group are adjacent to each other so that the alignment layer between the pixel electrodes of a same pixel electrode group and the alignment layer over the pixel electrodes are planarized; and

forming a first step portion projecting from the substrate surface beneath spacing between a pixel electrode of the first pixel electrode group and a pixel electrode of the second pixel electrode group adjacent to the first pixel group electrode;

forming the pixel electrodes so that an edge of each pixel electrode corresponds to the first step portion;

performing a rubbing process to the alignment layer; and

forming a light-shielding layer on at least one of the first substrate and the second substrate so that the light-shielding layer overlaps one of inclined surfaces of the first step portion in a plan view, along which a direction of the rubbing process of the alignment layer is downward.